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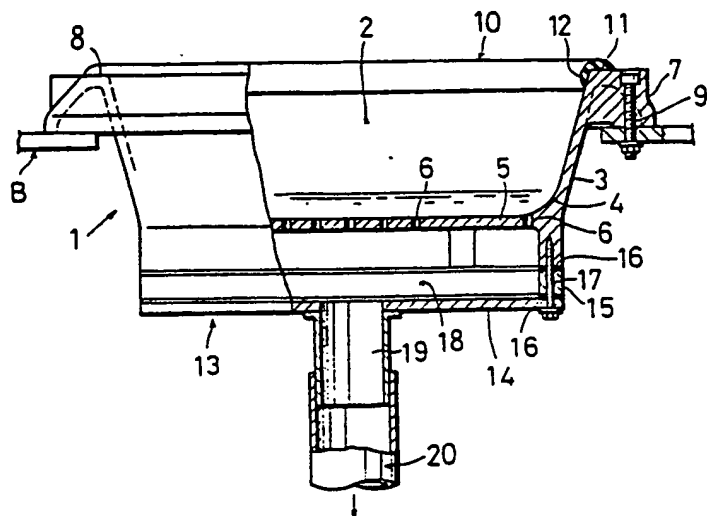
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GB 1441850
GB 1134858
GB 1101668
GB 1050380
GB 939088
GB 872442
GB 861355
GB 838859
GB 788416
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(54) Packing apparatus

(57) Packing apparatus comprises a container 1 open at its top and at least one vacuum manifold 13 positioned under the container and connected to an appropriate suction device. The container defines a packing chamber

2 into which part of a packing film is sucked to form a pocket to receive products to be packed therein. After the products have been located in the pocket the film of the pocket is folded over the products to form a package. The vacuum manifold communicates with the packing chamber through a plurality of holes.

Fig 1



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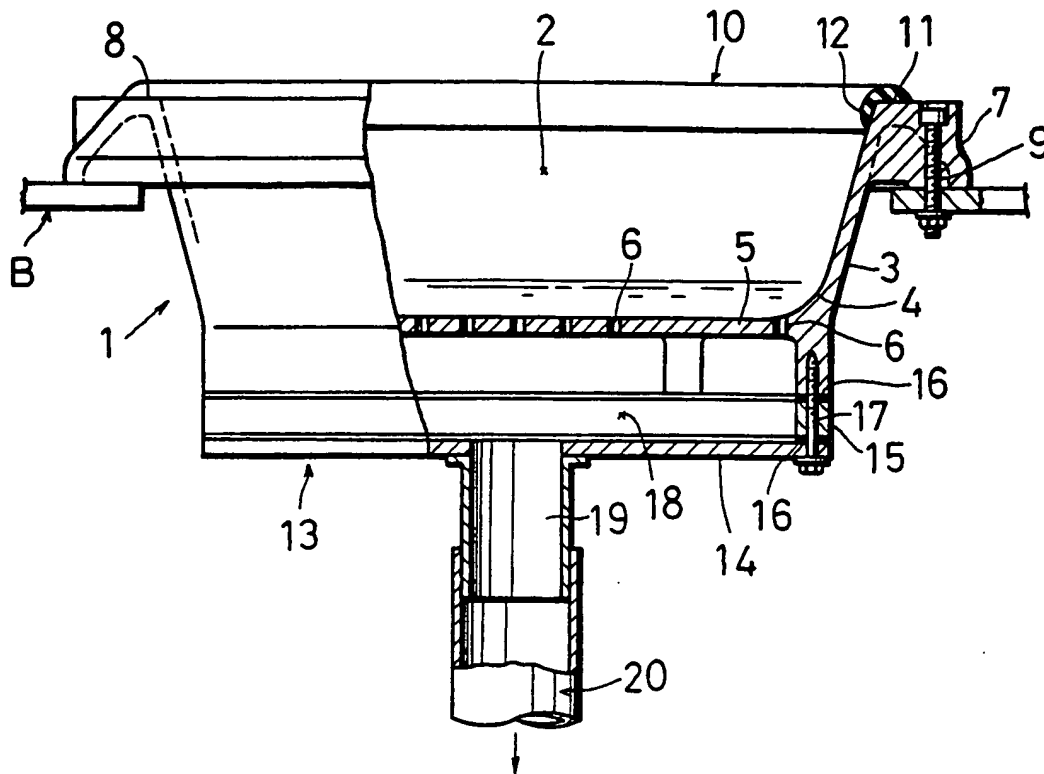
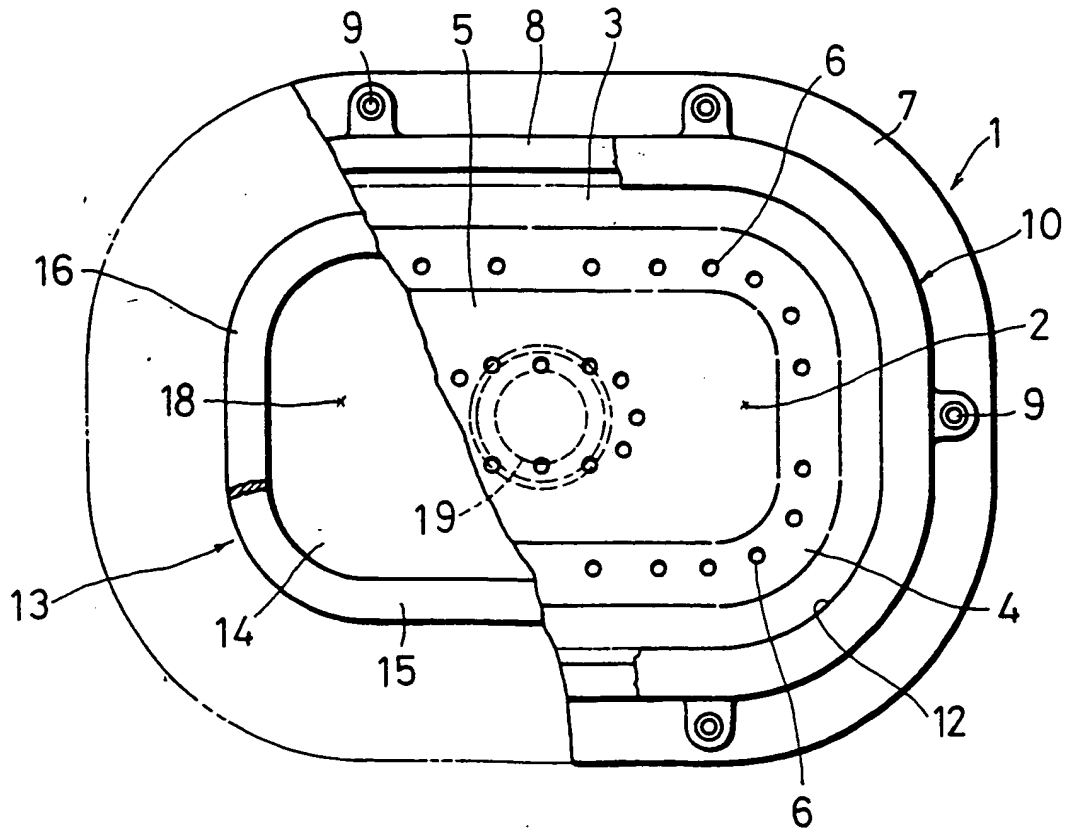
Fig 1**Fig 2**

Fig 3

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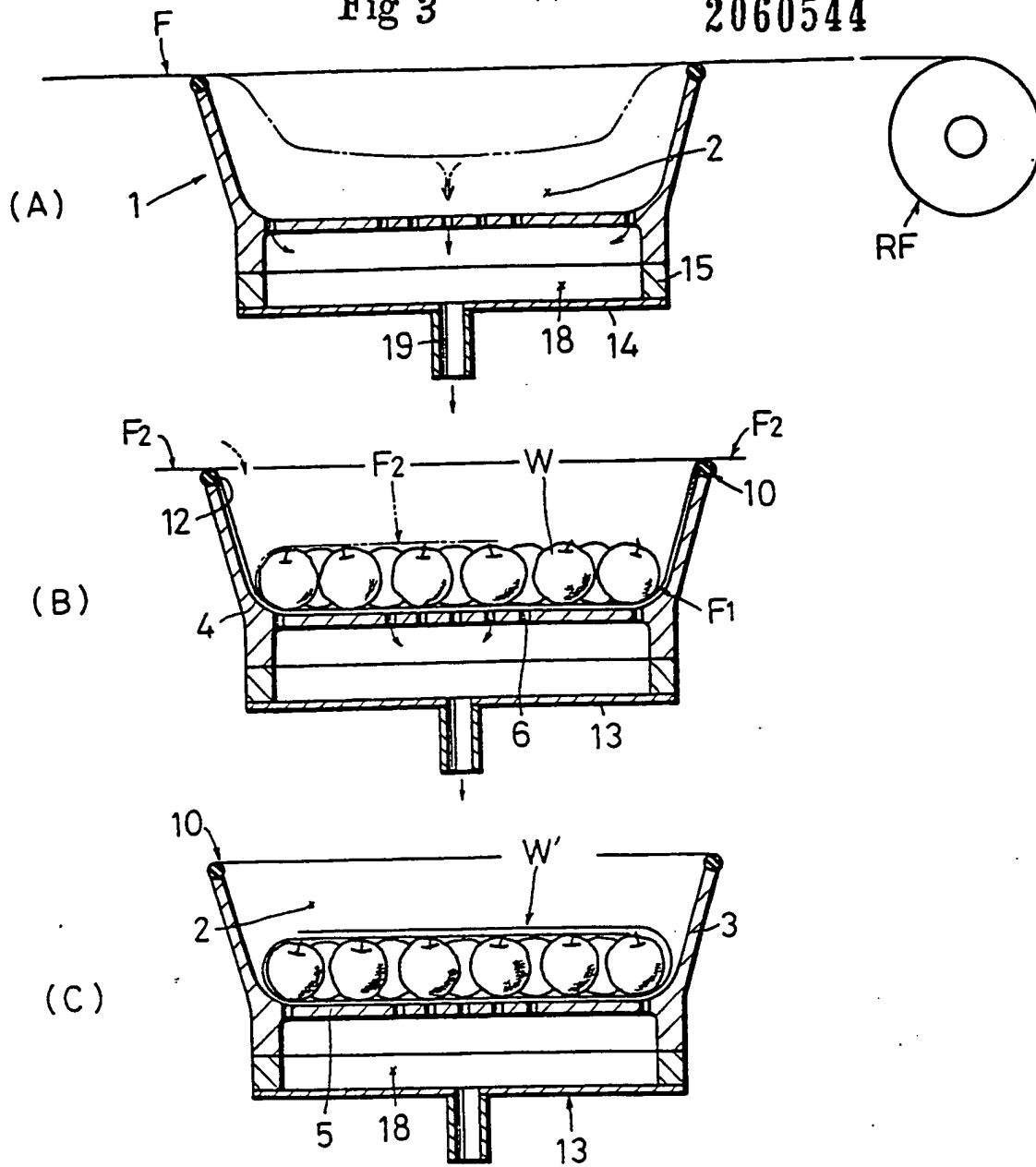
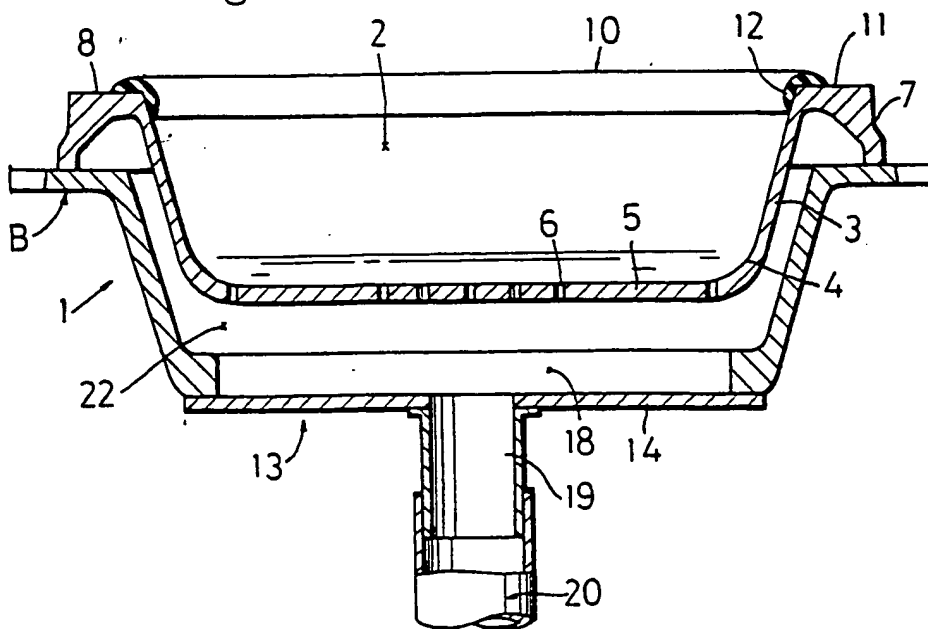
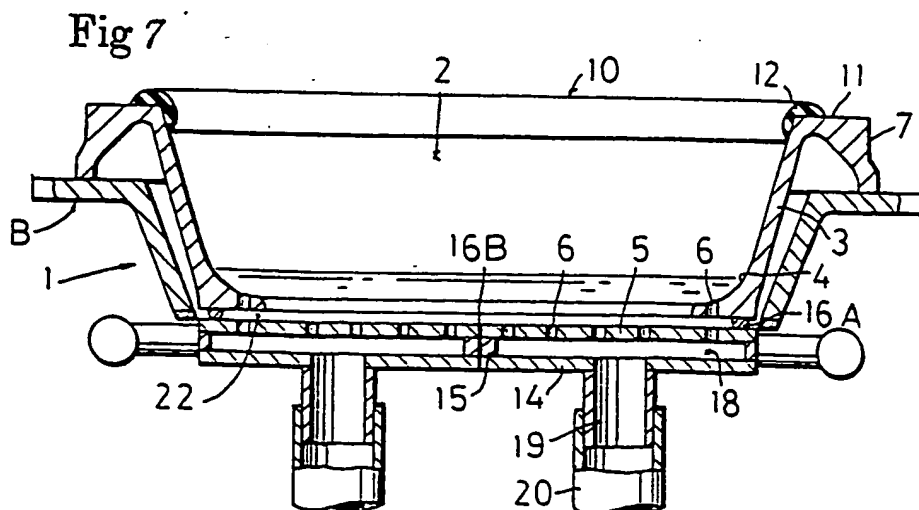
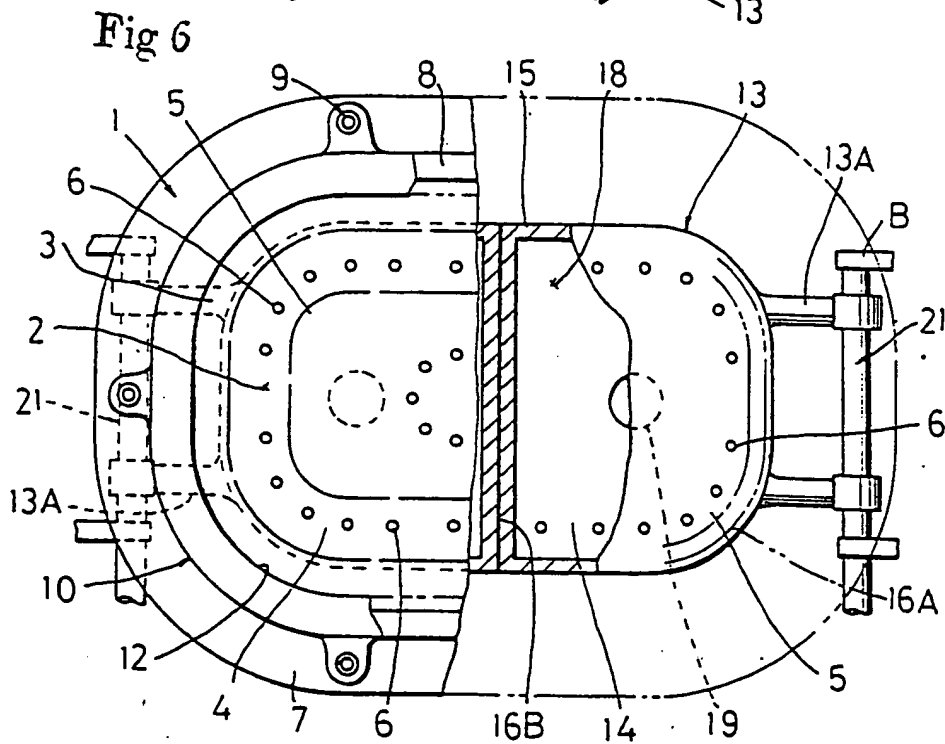
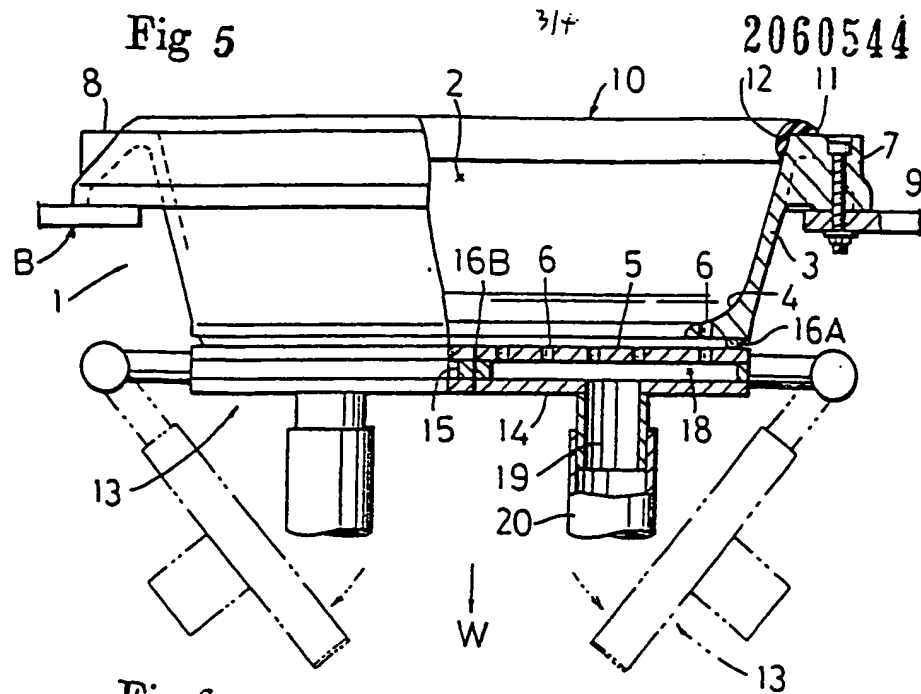


Fig 4





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Fig 8

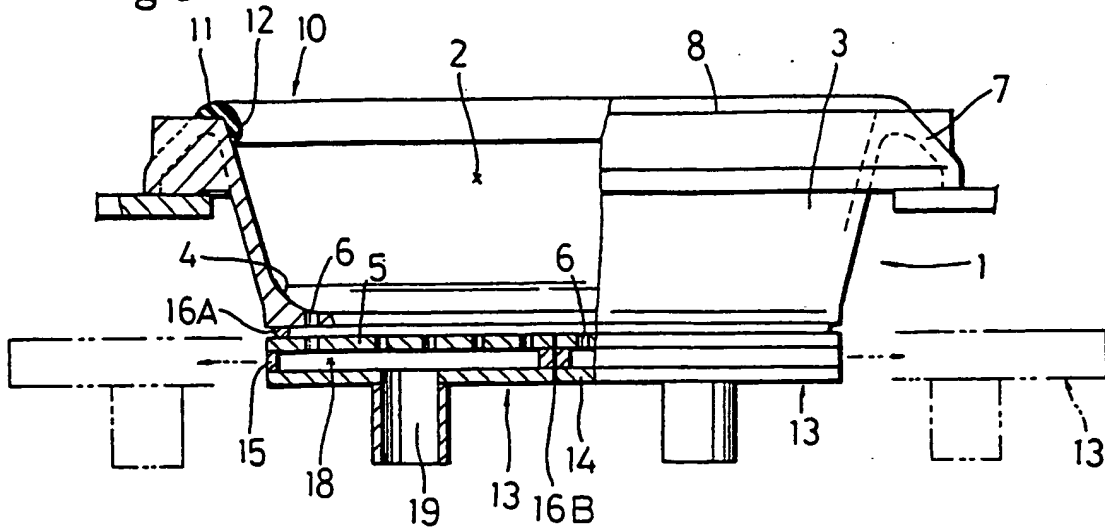


Fig 9

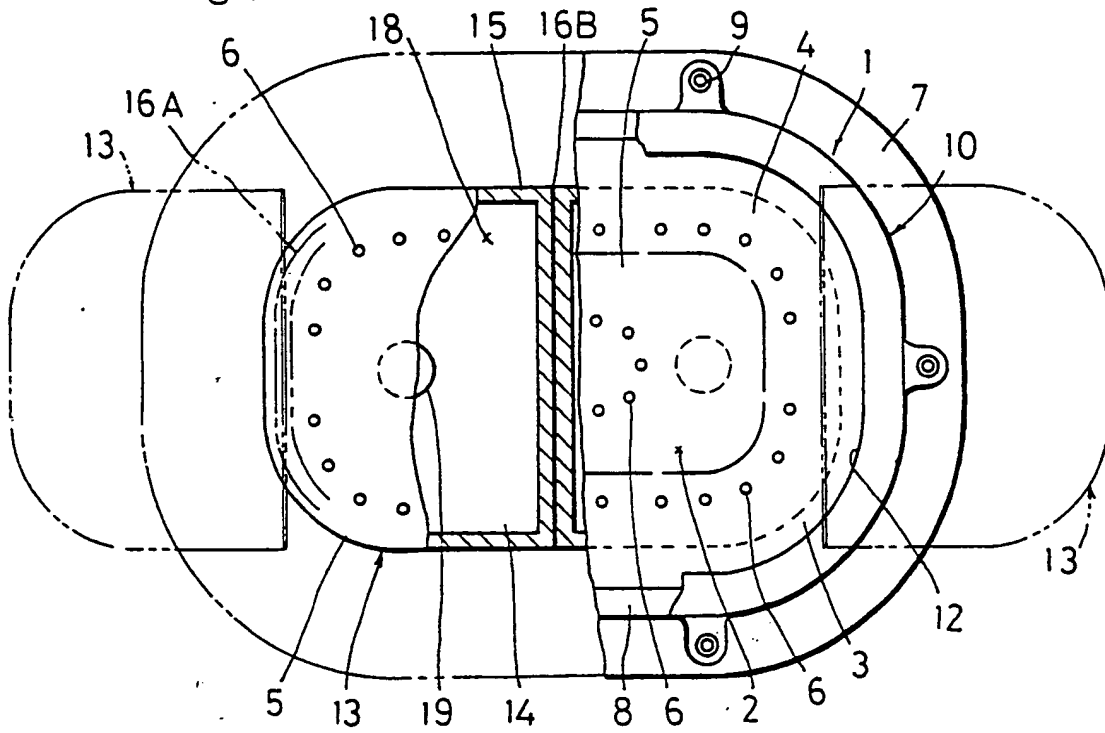
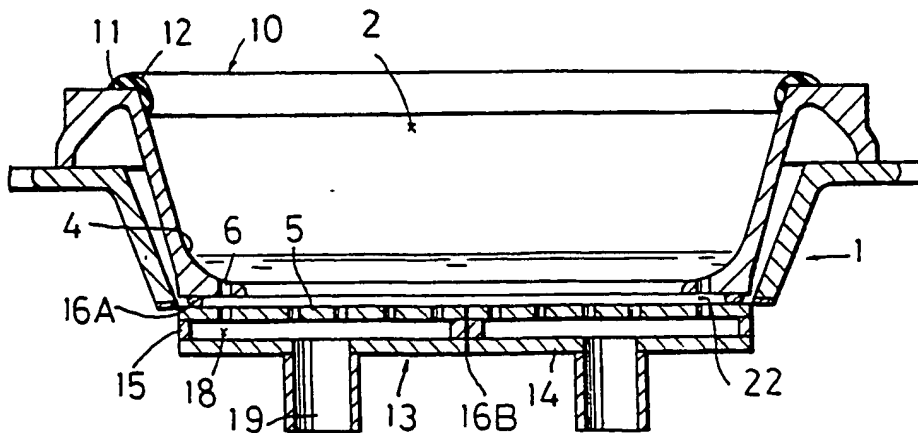


Fig 10



SPECIFICATION

Packing apparatus

The present invention relates to an apparatus for use in packing products in a wrapping film

5 such as an aluminium foil.

In a known packing apparatus, there is provided means such as a tray in which a predetermined amount of products such as vegetables and fruits are put and every tray holding the products is

10 wrapped by a film. Such an apparatus is uneconomical since the trays are wasted after use.

In another known packing apparatus such a tray is not utilized, but the products are manually wrapped in a film severed in predetermined size

15 and extended on a flat bed. In this case, the film is manually folded along the products. Such an apparatus takes time and requires much labor, and further, the products cannot be accurately packed.

According to the present invention there is

20 provided a packing apparatus comprising a container which is open at its top, at least one film absorption holder positioned under said container and defining a chamber to be connected to an appropriate suction device, said container defining

25 a packing chamber for holding a part of a packing film in a baggy shape and for receiving products to be packed therein, said chamber communicating with said packing chamber via a plurality of holes.

The apparatus is useful in effectively packing products which are irregular in size and instable

30 such as vegetables and fruits without utilizing any trays. In use, a sheet of wrapping film severed in predetermined size is stretched across the open end of the packing chamber and is then

35 downwardly sucked by the absorption holder into the chamber along the inner surface thereof to form a baggy portion in which the products are put. Thereafter the edges of the film are folded in manually in order to completely pack the products.

40 According to the present invention, the baggy portion of the wrapping film is securely held within the packing chamber by absorption, and the products put in the baggy portion are effectively packed without necessity of turning round, raising

45 or gathering the same. Therefore, products which are irregular in size and shape and instable, such as vegetables and fruit, can be effectively packed even if the products are separately supplied.

In order that the invention may be more clearly understood the following description is given by way of example only with reference to the

50 accompanying drawings in which:
Figure 1 is a partially fragmentary front elevational view of a packing apparatus embodying the present invention;

Figure 2 is a partially fragmentary top plan view of the apparatus of Figure 1;

Figures 3(A), (B) and (C) are cross sectional views illustrating operation of the apparatus of

60 Figure 1;

Figure 4 is a cross sectional view showing a modification of the embodiment of Figure 1;

Figure 5 is a partially fragmentary front elevational view of a second embodiment of the

65 present invention;

Figure 6 is a partially fragmentary top plan view of the apparatus of Figure 5;

Figure 7 is a cross sectional view showing a modification of the second embodiment;

70 Figure 8 is a partially fragmentary front elevational view of a third embodiment of the present invention;

Figure 9 is a partially fragmentary top plan view of the apparatus of Figure 8; and

75 Figure 10 is a cross sectional view showing a modification of the third embodiment.

Referring now to Figures 1 to 4 of the drawings in which a first embodiment of the present invention is shown, numeral 1 indicates a

80 container which is sealingly provided in its lower portion with a detachable absorption holder 13. The container 1 is provided in the form of an oblong vessel open at its top and defining a packing chamber 2 of appropriate capacity. The

85 container 1 has an inclined peripheral wall 3, a curved guide portion 4 and a base plate 5 connected with the peripheral wall 3 by the guide portion 4. A plurality of vent holes 6 are provided in the center of the base plate 5 and in the

90 circumference of the guide portion 4. A flange 7 extends from the upper end of the peripheral wall 3, and a holding ring 10 for a film is replaceably mounted on a seat 8 defined by the upper surface of the flange 7. The container 1 thus constructed

95 is mounted to a frame B of the packing apparatus by the flange 7 of the peripheral wall 3 and a bolt 9.

The holding ring 10 is adapted to receive an extended film of predetermined size and prevent it from slipping off. It is made of material such as rubber or soft synthetic resin which has a high

100 coefficient of friction with the film. Ring 10 is placed so that a concave portion 11 of it is engaged with the seat 8 and its inner end 12 extends downwardly in contact with the upper

105 inner surface of the peripheral wall 3 to act as a holding end. By virtue of provision of this holding end 12, frictional force is available to hold the extended film while it is being pushed downwards to adopt a baggy shape so that it can be

110 accurately formed.

The absorption holder 13 comprises a cover 14 and a ring-shaped wall 15 and is made in the form of a cap which fits in size and shape with the

115 lower end of the container 1. The absorption holder 13 is secured to the lower surface of the peripheral wall 3 by a bolt 17 extending through a sealing member 16 so that an air chamber 18 is defined between the absorption holder 13 and the

120 base plate 5. This air chamber communicates with a suction device (not shown) through a mouth 19 of the cover 14 and a duct 20, and with the packing chamber 2 through the vent holes 6.

The packing apparatus thus constructed is

125 suitable for manual use, though, it may of course be utilized as an automatic apparatus. In either case, products can be packed without provision of trays therefor.

In operation, a sheet of film F severed to a

predetermined length is drawn from a rolled film RF to cover the container 1, and it is held in a straightened or stretched condition by the holding ring 10 as shown in Figure 3(A). In this condition, the suction device is employed to operate the absorption holder 13 so that the extended film F is pulled downwardly by vacuum within the packing chamber 2 as shown in the discontinuous line in Figure 3(A), while the edges thereof are held by the holding ring 10. The film F is continuously absorbed along the inner surface of the packing chamber 2 to be in close contact with the base plate 5 as shown in Figure 3(B) to form a baggy portion F1, which is adapted to receive a predetermined number of products to be wrapped W. Thereafter edges F2 of the film F, which have meanwhile been held by the holding ring 10, are folded over and secured to each other to form a wrapped package W' which can be out of the container 1 as shown in Figure 3(C).

When elongate products such as cucumbers and carrots are packed using the packing apparatus of the present invention, it is preferable to arrange the products in rows parallel to their longitudinal direction. In all cases, the products, such as vegetables and fruit, may be separately put into the packing chamber 2 and held therein to be effectively packed without the necessity of any trays.

Since the edges F2 of the film F are effectively held by the holding end 12 of the holding ring 10 and are prevented from slipping off when the baggy portion F1 is formed in the packing chamber 2, the film F is accurately formed and held in the shape of a bag without being loosened so as to conduct satisfactory packing.

The absorption holder 13 may be in the form of a box in section with the top of the box being the bottom of the packing chamber 2. As shown in Figure 4, the frame B may have a hollow portion 22, of which the bottom functions as the absorption holder 13 so that the hollow portion 22 detachably receives the container 1.

Attention is now drawn to Figures 5 to 7 in which a second embodiment of the present invention is shown. In this embodiment, there are provided under the container 1 a pair of absorption holders 13 which are downwardly pivotable as shown in dot-dash lines in Figure 5. The container 1 is identical with that in the first embodiment insofar as it has a side wall 3, flange 7, ring 10 and guide portion 4, but the bottom of the packing chamber 2 is fully opened.

The absorption holders 13 are each pairs of semicircular plates which conform to the bottom of the container 1, the upper plates being provided with a plurality of vent holes 6 and define the bottom 5 of the packing chamber 2. The outer ends of the absorption holders 13 are connected by arms 13A to rotating shafts 21 which are supported by the frame B to pivotally move between closed positions in which the holders 13 horizontally contact with each other and open positions in which the holders 13 are downwardly inclined.

The holders 13 communicate with a common suction device (not shown) through flexible pipes 20. When in the closed positions, the holders 13 are kept in contact with the container 1 in an airtight manner by a seal ring 16A provided in the lower surface of the container 1 and another seal ring 16V interposed between the holders 13. With respect to a means for opening and closing the holders 13, a rod of a cylinder linked with arms connected to the rotating shafts 21 or a shaft connected to a motor and linked through bevel gears with the rotating shafts 21 may be employed.

The packing apparatus of the second embodiment is more suited for automatic operation, though, it may of course be utilized for manual operation with the holders 13 kept closed. After the packing operation is completed, the absorption holders 13 are opened by means such as a push button to downwardly discharge the wrapped package W'.

In this embodiment, the holders 13 are formed as plates which can be downwardly inclined and function as a chute for discharging the wrapped package W'.

In this embodiment, further, the frame B may have a hollow portion 22, of which the bottom is separated in two to function as the downwardly pivotable absorption holders 13 so that the hollow portion 22 detachably receives the container 1 (see Figure 7).

In a third embodiment of the present invention as shown in Figures 8 to 10, there are provided under the open bottomed container 1 a pair of absorption holders 13 which are horizontally slidable, with products being packed when the holders 13 are closed and downwardly discharged upon opening of the holders 13.

With respect to means for causing sliding movement of the holders 13, accurate guiding means such as a roller and a rail, a projection and a slit and a shaft and a bearing may be linked to an appropriate driving means for opening and closing the holders 13. Further, the holders 13 may be formed by a plate which is horizontally slidable.

In this embodiment, the frame B may again have a hollow portion 22, of which the bottom is separated in two to function as the horizontally slidable absorption holders 13 so that the hollow portion 22 detachably receives the container 1 (see Figure 10).

The holders 13 in the second and third embodiments may be made swingable. Further, when the packing apparatus according to the present invention as shown in the second and the third embodiments is utilized as an automatic apparatus, it may be vertically movable and may be provided with a mechanism comprising a means for adjusting the dimensions of the packing chamber 2 which is connected to a rod of a cylinder provided outwardly of the packing chamber 2.

CLAIMS

1. A packing apparatus comprising a container

which is open at its top, at least one film absorption holder positioned under said container and defining a chamber to be connected to an appropriate suction device, said container defining a packing chamber for holding a part of a packing film in a baggy shape and for receiving products to be packed therein, said chamber communicating with said packing chamber via a plurality of holes.

2. Apparatus according to claim 1 wherein said container has a bottom plate with a plurality of holes for communicating with said chamber of said absorption holder.

3. Apparatus according to claim 2 wherein said absorption holder has a cover and a ring-shaped wall and is made in the form of a cap which fits with said container.

4. Apparatus according to claim 1 wherein the chamber of the absorption holder has an upper

20 wall defining the base plate of said packing chamber and provided with a plurality of holes for communicating with said packing chamber.

5. Apparatus according to claim 4 wherein said absorption holder comprises pairs of semicircular plates which are downwardly pivotable and between which the chamber is formed.

25 6. Apparatus according to claim 4 wherein the absorption holder comprises pairs of plates which are horizontally slidable and between which the chamber is formed.

30 7. Apparatus according to any preceding claim including a rim of rubber or like material at the upper inner edge of the container.

8. Packing apparatus substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.